

Appendix D

Charts of Plotted Data from Tensiometers with Performance Evaluation and Recommendations

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D1. KEY TO APPENDIX

The following plots show the raw soil gas and soil-water potential data:

- Soil gas pressure—The top graph is the raw soil-water pressure from the upper sensor. It is presented as recorded with no modification.
- Soil-water potential (absolute)—The bottom graph is the raw (absolute) soil-water pressure as recorded by the lower transducer, with no modification.

Comments at the base of each set of plots refer to the instrumentation by depth. It is recommended that sensors **highlighted** with red be discontinued because of failure of sensor or failure of tensiometer (lack of seal or unable to fill with water). Sensors **highlighted** with blue are instruments that have shown some evidence of working. Troubleshooting on these instruments should be continued. Sensors **highlighted** with green are working.

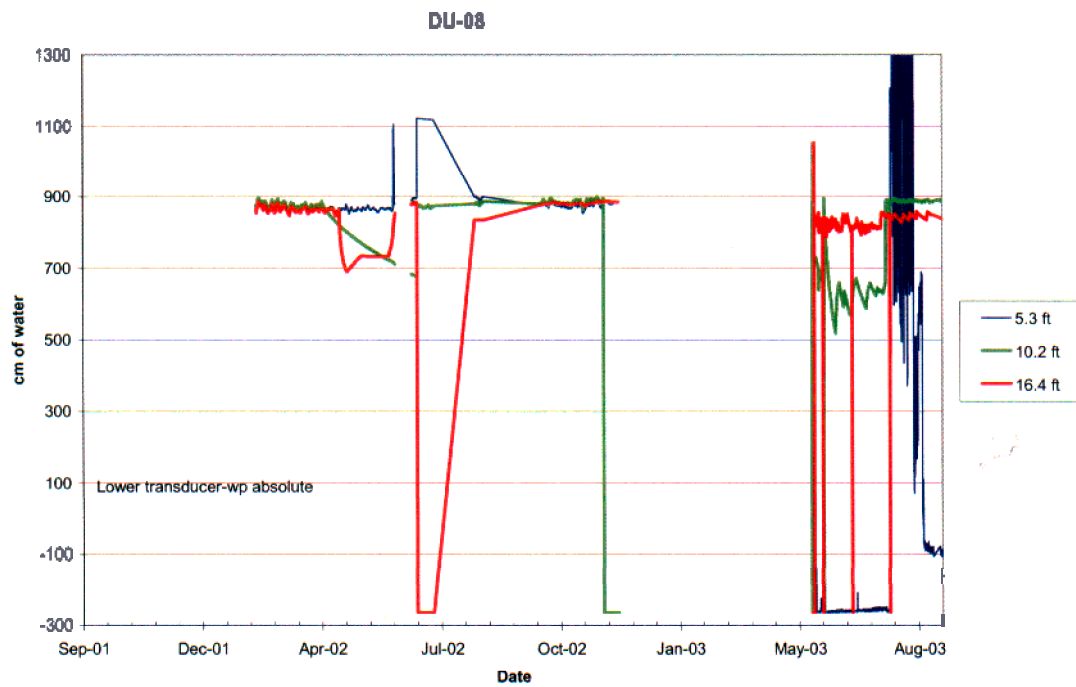
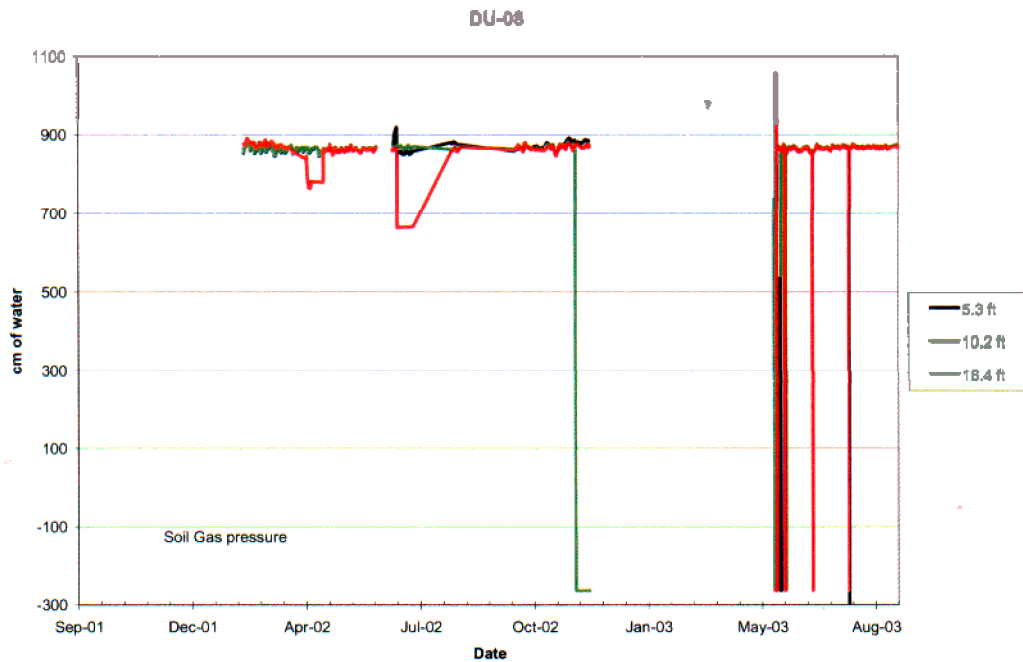


Figure D-1. Cluster DU-08.

T1, 5.3 ft: Soil gas pressure not working, absolute wp transducer not operating, spool valve not operating.
T2, 10.2 ft: Soil gas pressure working, absolute wp transducer works sporadically.
T3, 16.4 ft: Soil gas pressure working, absolute wp transducer has not responded to refilling.

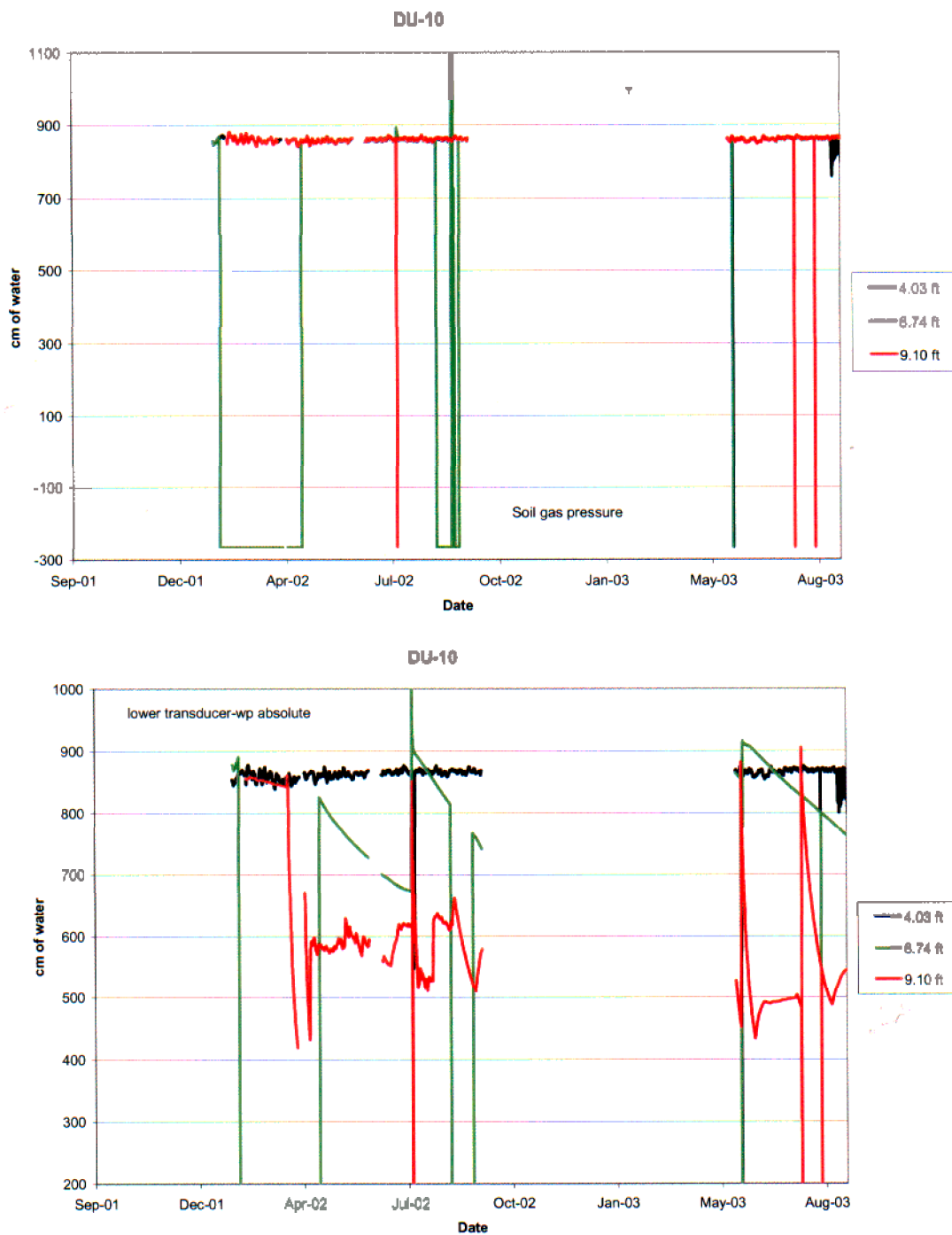


Figure D-2. Cluster DU-10.

T1, 4 ft: Soil gas pressure working, absolute wp transducer has not worked.
 T2, 6.7 ft: Soil gas pressure working, absolute wp transducer has responded to refilling.
 T3, 9.1 ft: Soil gas pressure working, absolute wp transducer data are variable, but sensor appears to be working in September 2003.

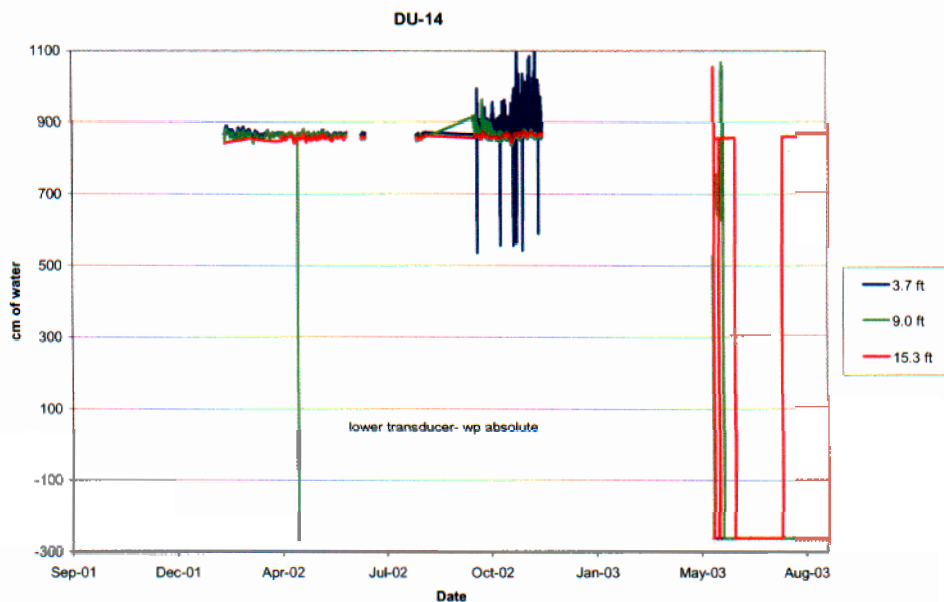
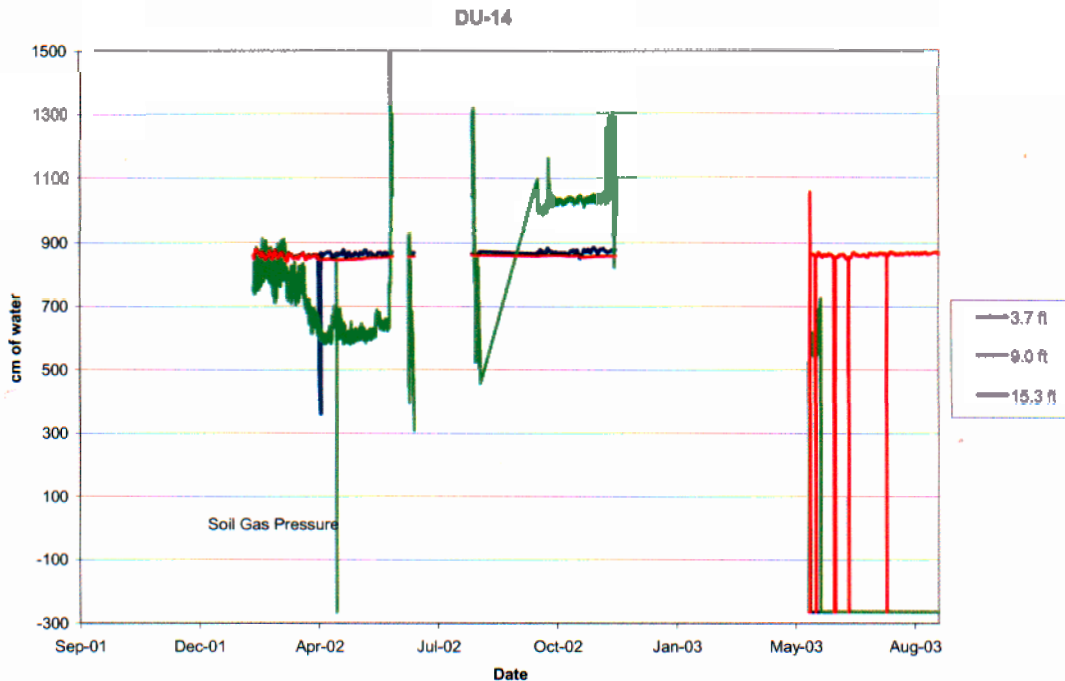


Figure D-3. Cluster DU-14.

T1, 3.7 ft: Soil gas pressure and absolute wp transducer not working (-273).

T2, 9 ft: oil gas pressure not working, absolute wp transducer shows loss of signal, also no response to refilling, could not field calibrate.

T3, 15.3 ft: Soil gas pressure does not appear to be working (data are flat in fall 2003), transducer not able to yield good data because spool valve is not working, cannot fill with water.

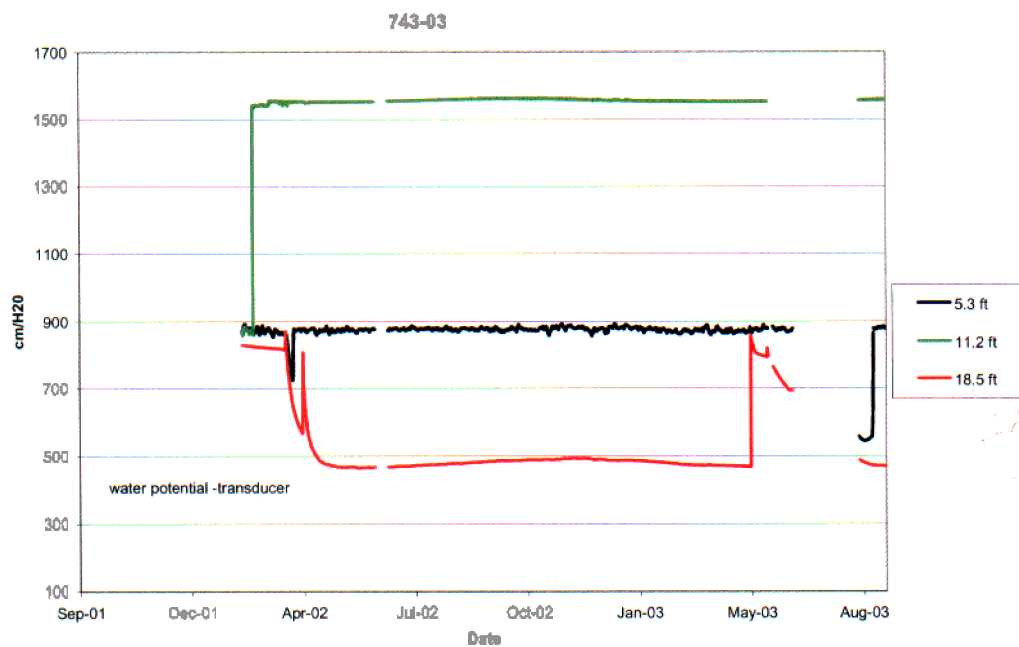
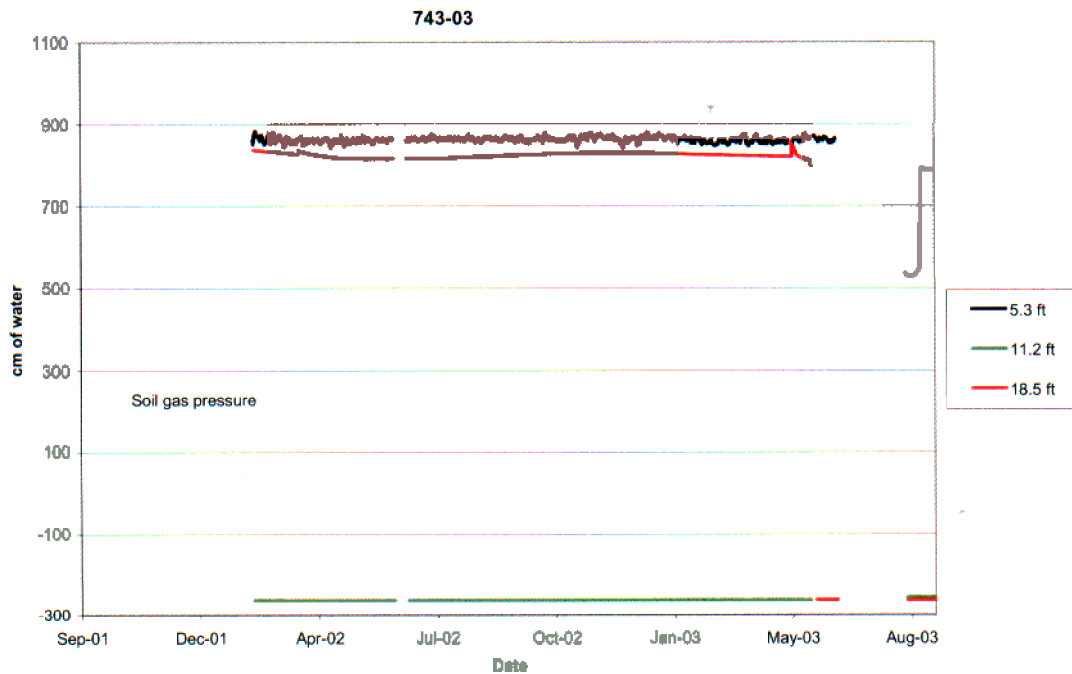


Figure D-4. 743-03.

T1, 5.3 ft: Soil gas pressure not currently working, [redacted] has responded to refilling with water in the past. Soil gas pressure and wp wires may be reversed.

T2, 11.2 ft: Soil gas pressure not working (-273), [redacted] absolute wp transducer not working, out of range.

T3, 18.5 ft: [redacted] appears isolated from atmosphere in early measurements, not giving a signal in later measurements. [redacted] absolute wp transducer working.

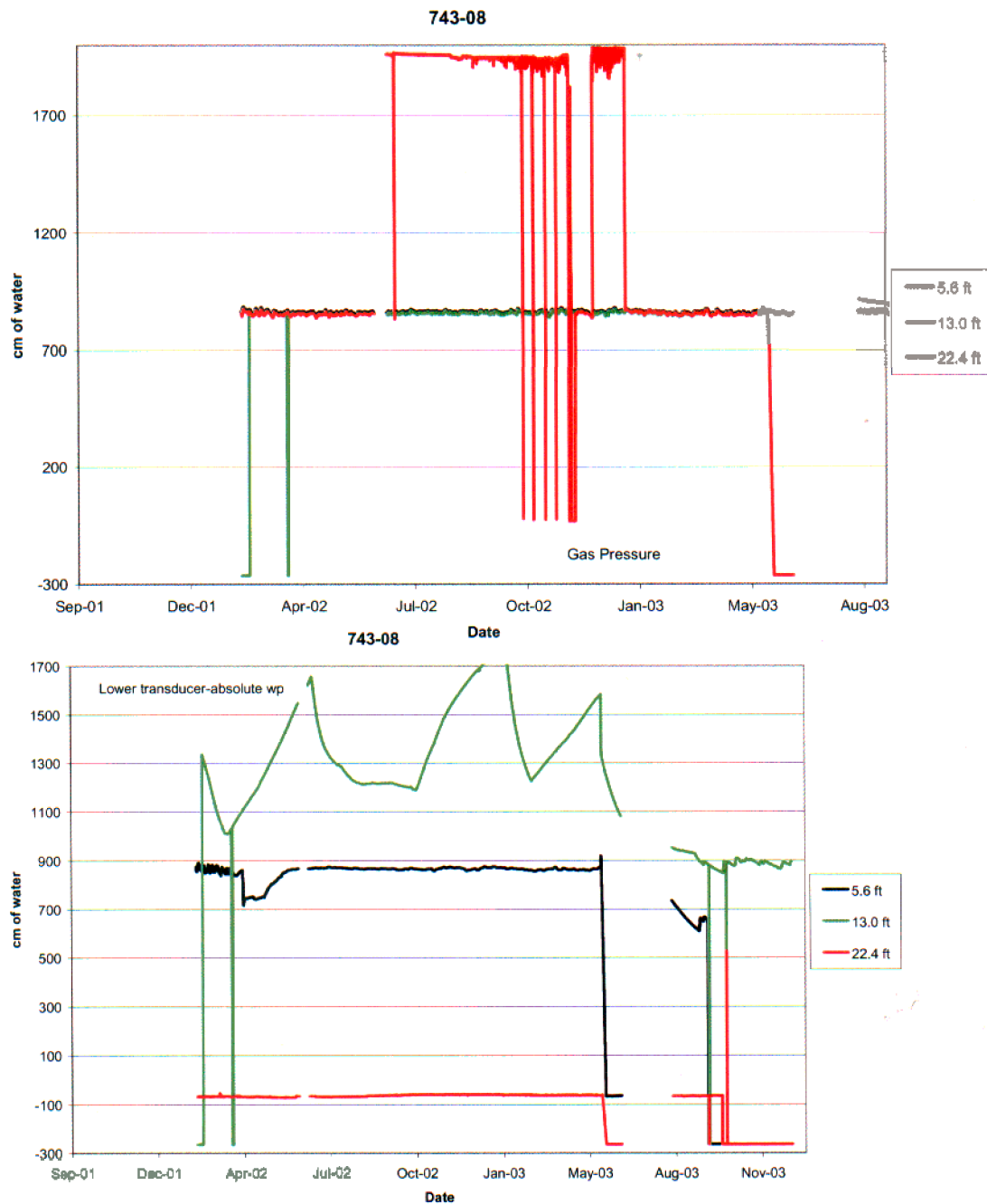


Figure D-5. 743-08.

T1, 5.6 ft: Soil gas pressure working, absolute wp transducer may be working.
 T2, 13 ft: Soil gas pressure working, absolute wp transducer beginning to track barometric pressure, try refilling.
 T3, 22.4 ft: Soil gas pressure working, absolute wp transducer has never responded, wires are pulled loose.

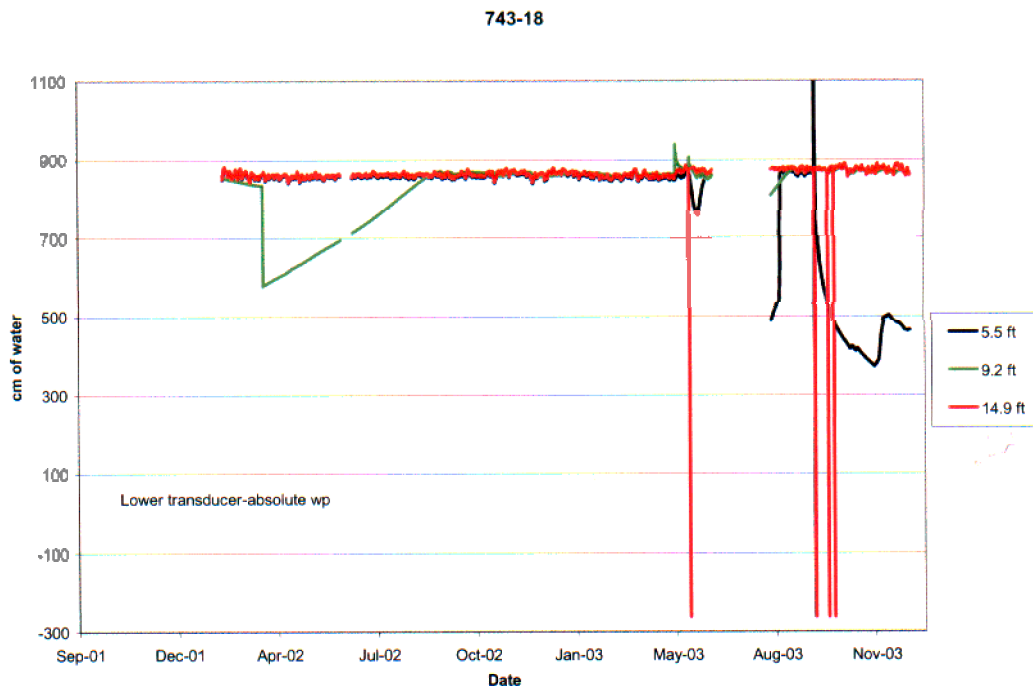
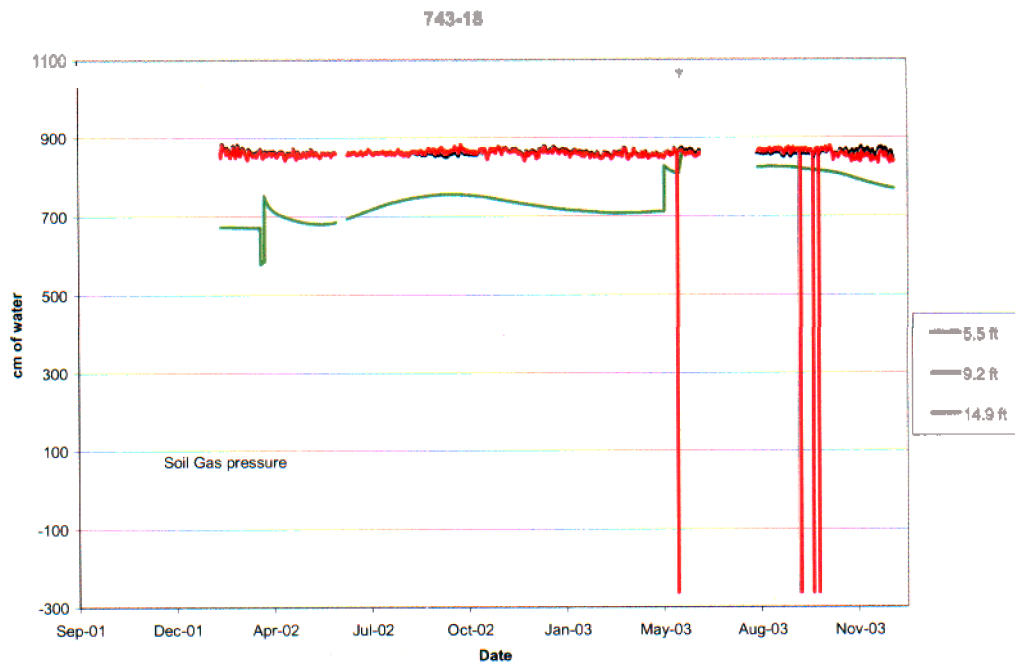


Figure D-6. 743-18.

T1, 5.5 ft: Soil gas pressure working, absolute wp transducer responded to refilling,
 T3, 9.2 ft: Soil gas pressure appears to be isolated from atmosphere, absolute wp transducer not
 responding.
 T2, 14.9 ft: Soil gas pressure working, discontinued absolute wp transducer, spool valve stuck open.

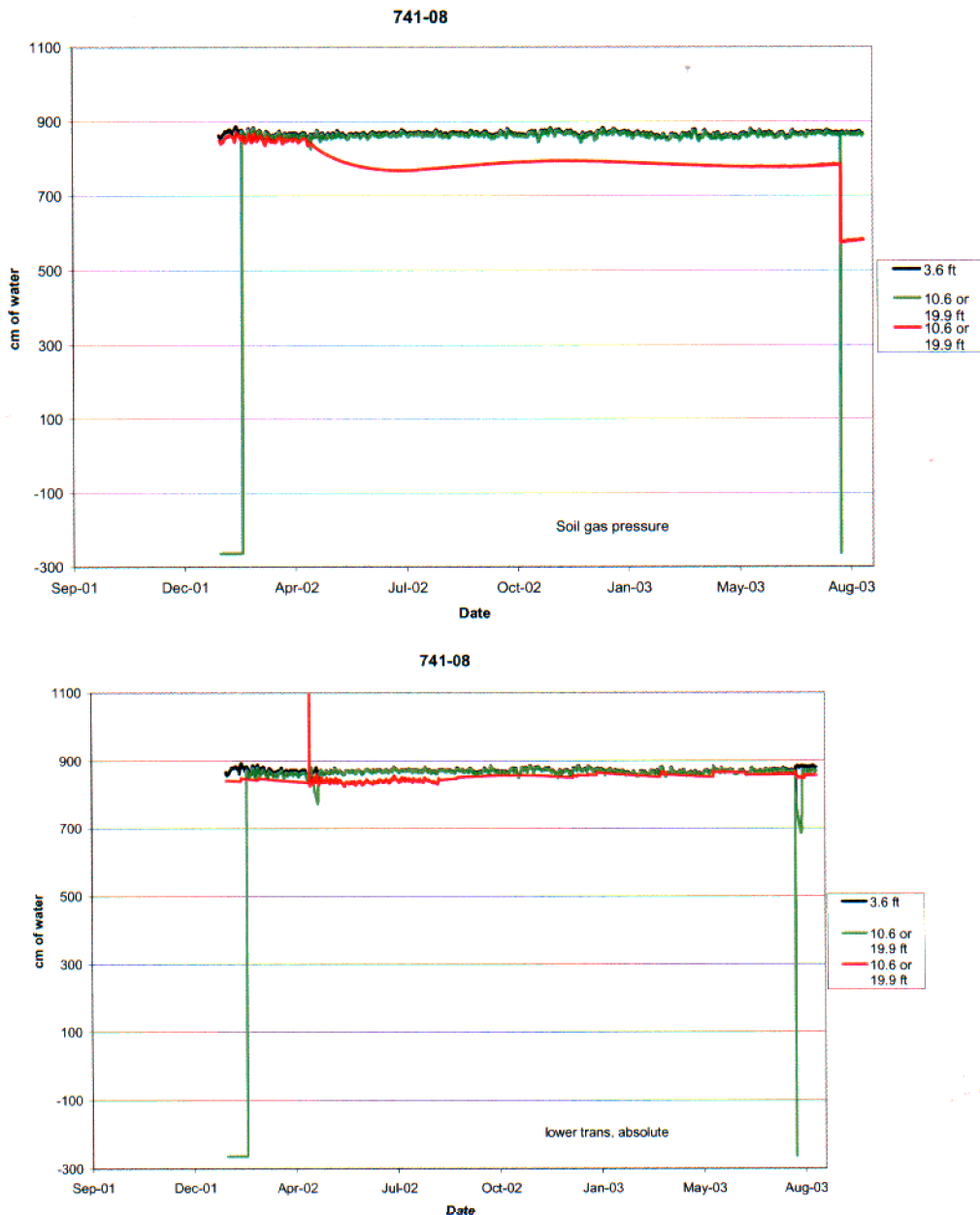


Figure D-7. 741-08.

T1, 3.6 ft: [redacted] working, [redacted] not working.

Note: Wires between the 10.6- and 19.9-ft depths were switched in September 2003, and the switch needs to be double-checked in the field. Therefore, the following two tensiometers are not referred to by depth.

Green line: [redacted] works, [redacted] absolute wp transducer shows response to refilling.

Red line: Wires for soil gas pressure and absolute wp transducer may be switched. If wires are switched, (lower figure) works, but [redacted] absolute wp transducer (upper figure) worked until fall 2003, needs troubleshooting.

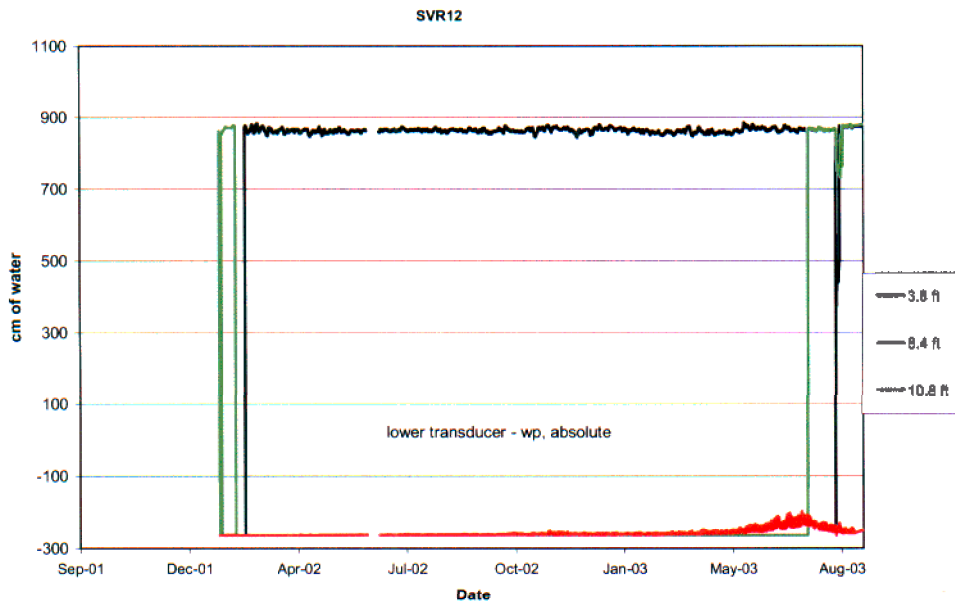
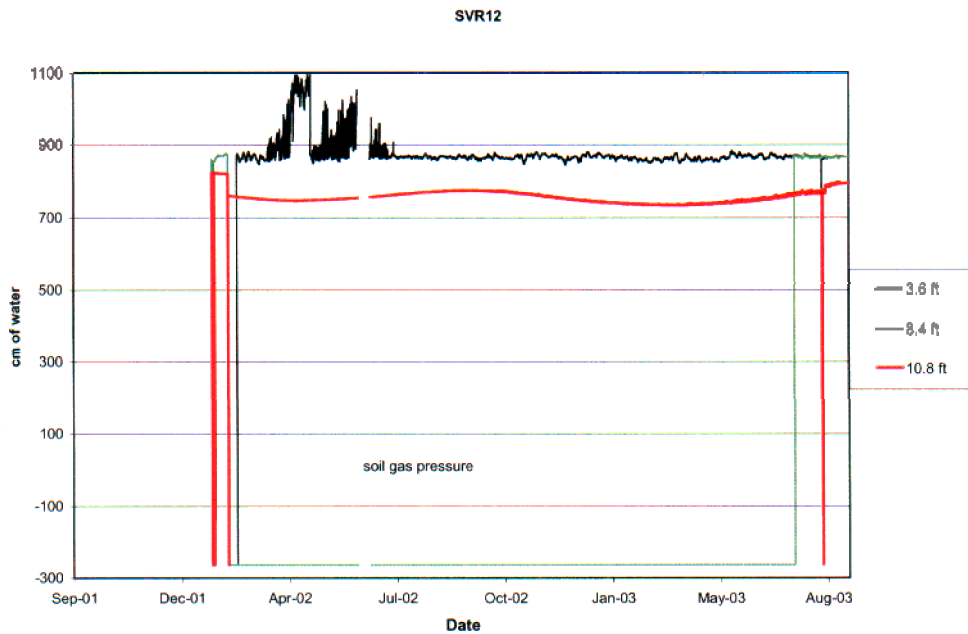


Figure D-8. SVR-12.

T1, 3.6 ft: Soil gas pressure works, [redacted] has not responded to refilling.
T2, 8.4 ft: Soil gas pressure currently working after not working for over 1 year, absolute wp transducer appears to respond to refilling.
T3, 10.8 ft: Soil gas pressure appears to be isolated from atmosphere, absolute wp transducer is not operable (field checked).

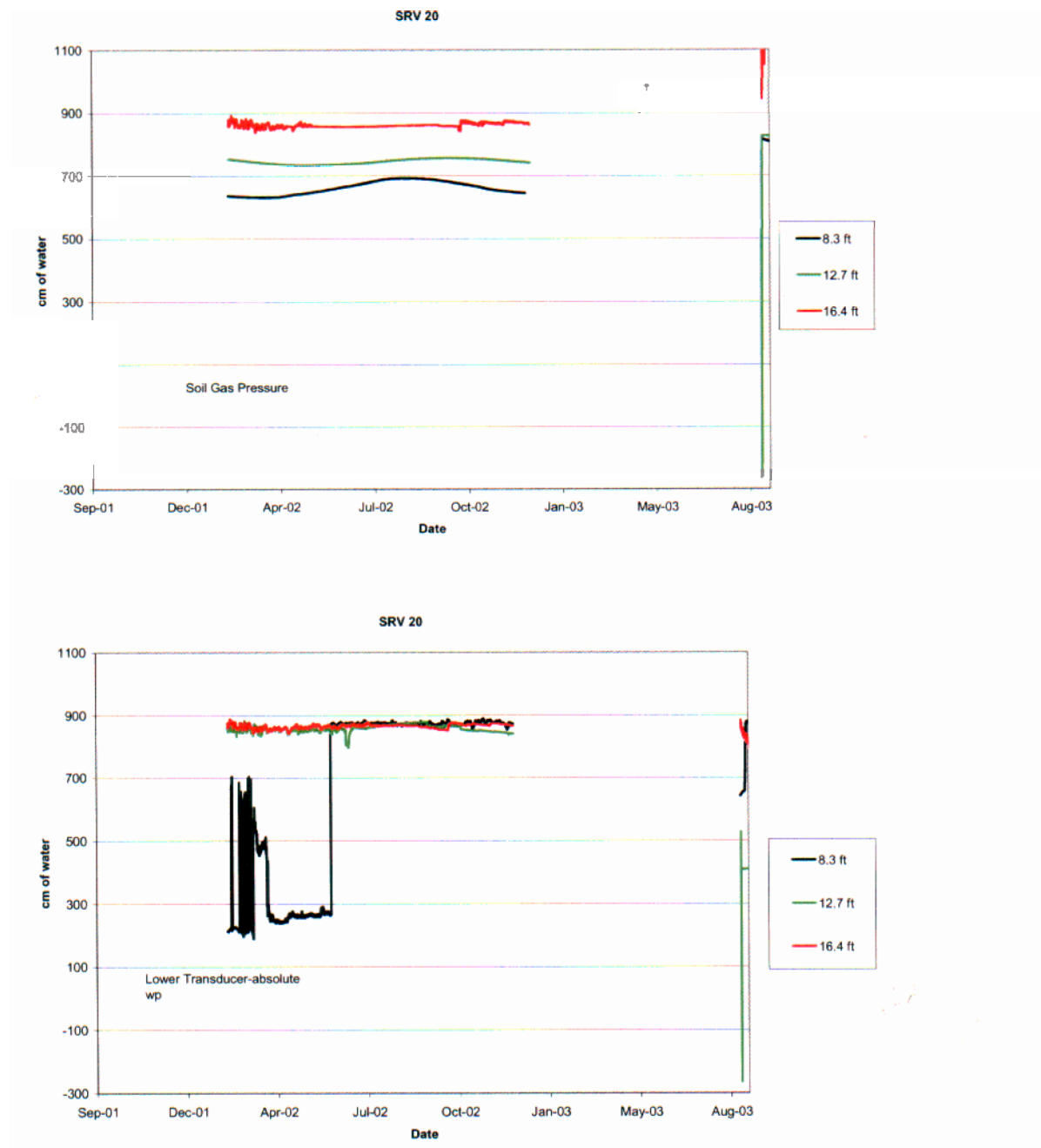


Figure D-9. SVR-20.

T1, 8.3 ft: [REDACTED] appears to be isolated from atmospheric pressure, [REDACTED] has responded in the past.

T2, 12.7 ft: [REDACTED] appears to be isolated from atmospheric pressure, absolute wp transducer appears to be working.

T3, 16.4 ft: Soil gas pressure working, isolated from atmospheric pressure, [REDACTED] is working.

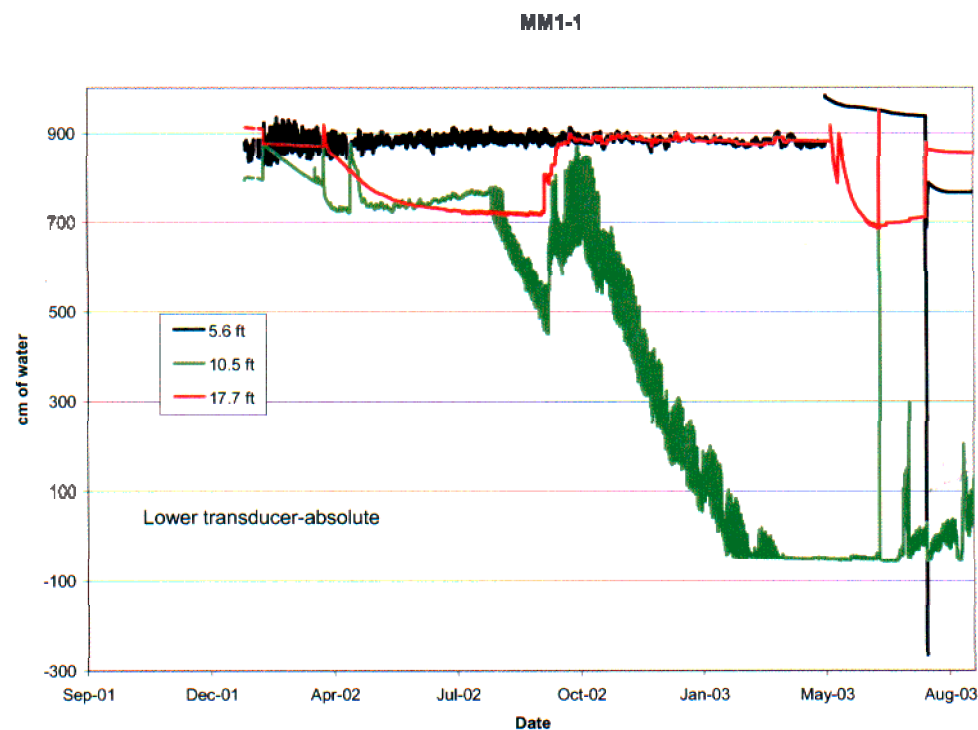
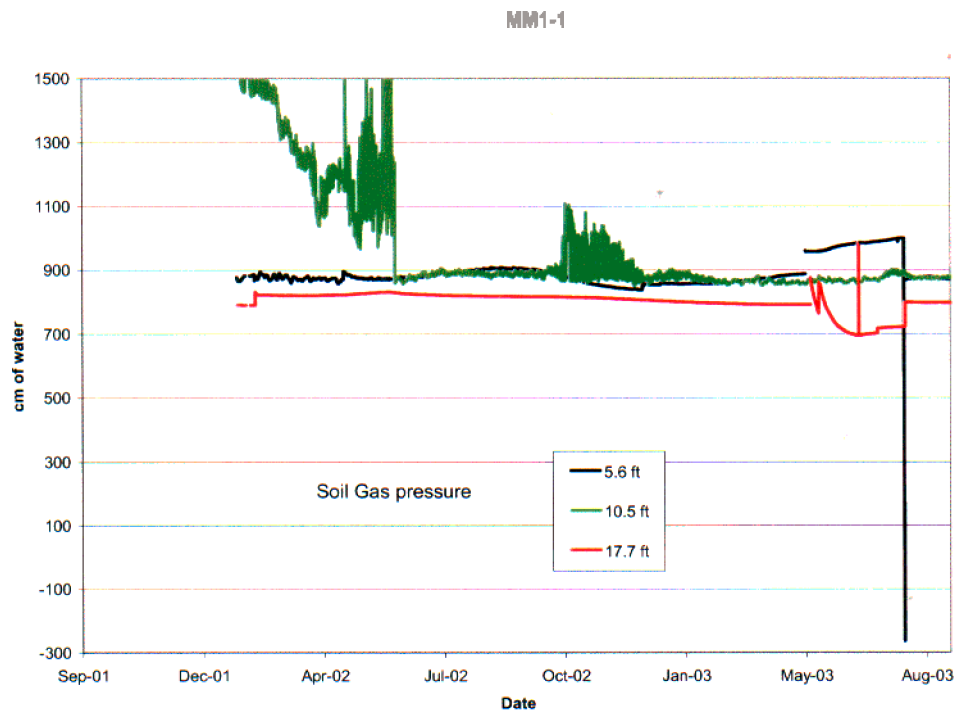


Figure D-10. MM1-1

T1, 5.6 ft: Soil gas pressure works, lower transducer started working July 29, 2003.

T2, 10.5 ft: Soil gas pressure works after mid-2002, lower transducer has failed.

T3, 17.7 ft: Soil gas pressure appears isolated from atmosphere, lower transducer working until July 29, 2003.

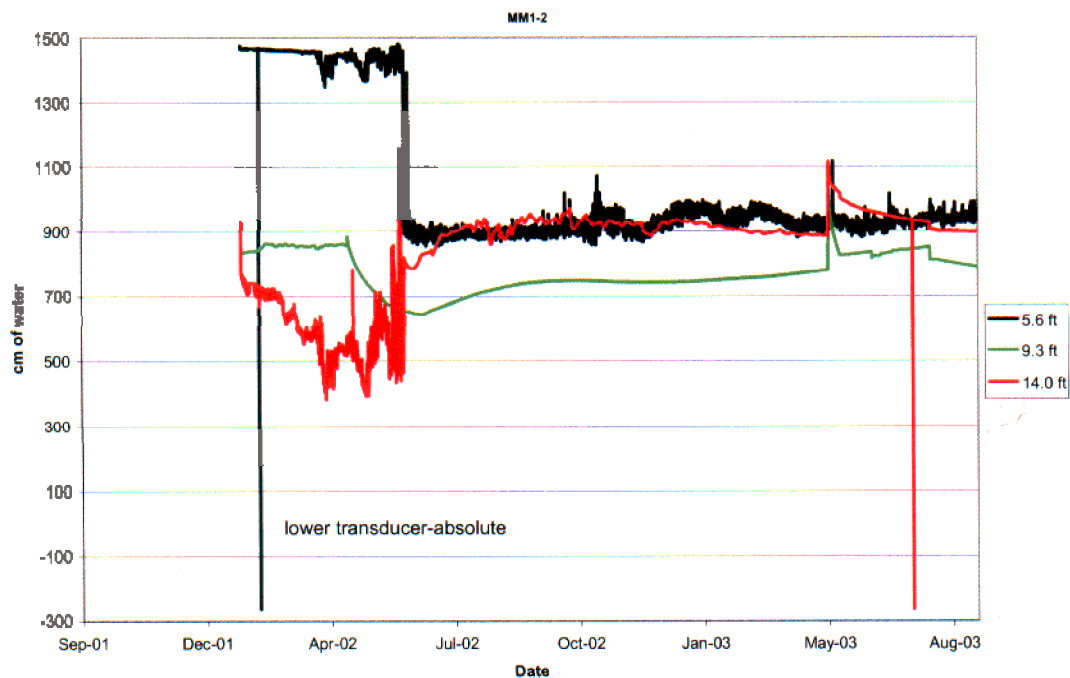


Figure D-11. MM1-2.

T1, 5.6 ft: Soil gas pressure working, lower transducer leaked, couldn't calibrate.

T2, 9.3 ft: Soil gas pressure working, lower transducer worked earlier.

T3, 14 ft: Soil gas pressure isolated from atmosphere but responds to calibration, is questionable, continue to troubleshoot.

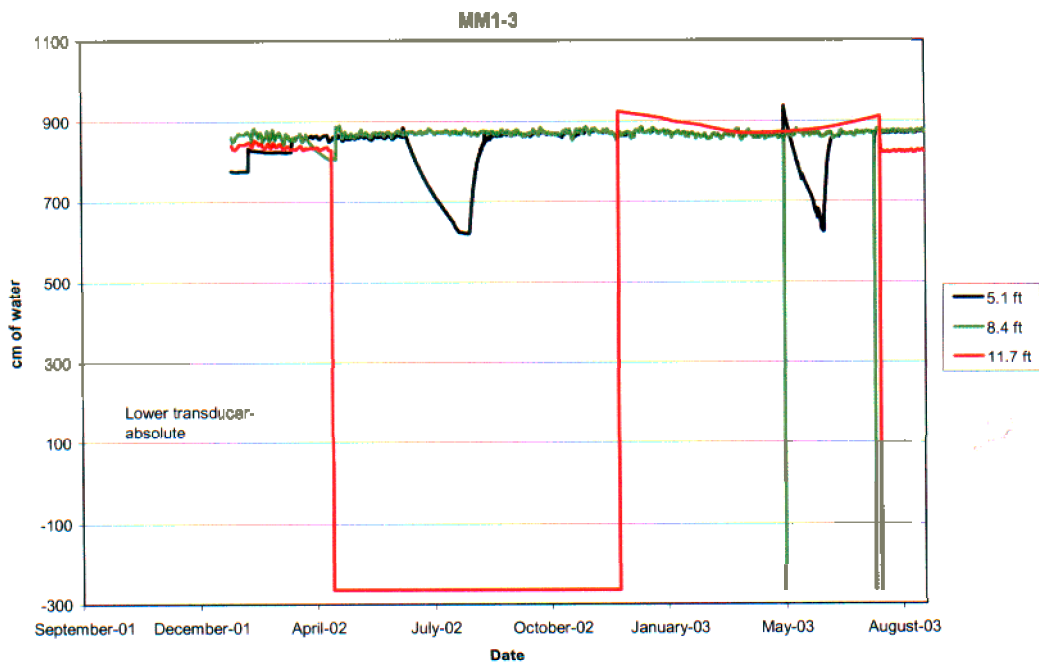


Figure D-12. MM1-3.

T1, 5.1 ft: Soil gas pressure works, solute wp transducer works sporadically.
 T2, 8.4 ft: Soil gas pressure works, solute wp transducer showed early signs of working.
 T3, 11.7 ft: Soil gas pressure and solute wp transducer not working. Water came out of line when applied vacuum to calibrate, so may be saturated.

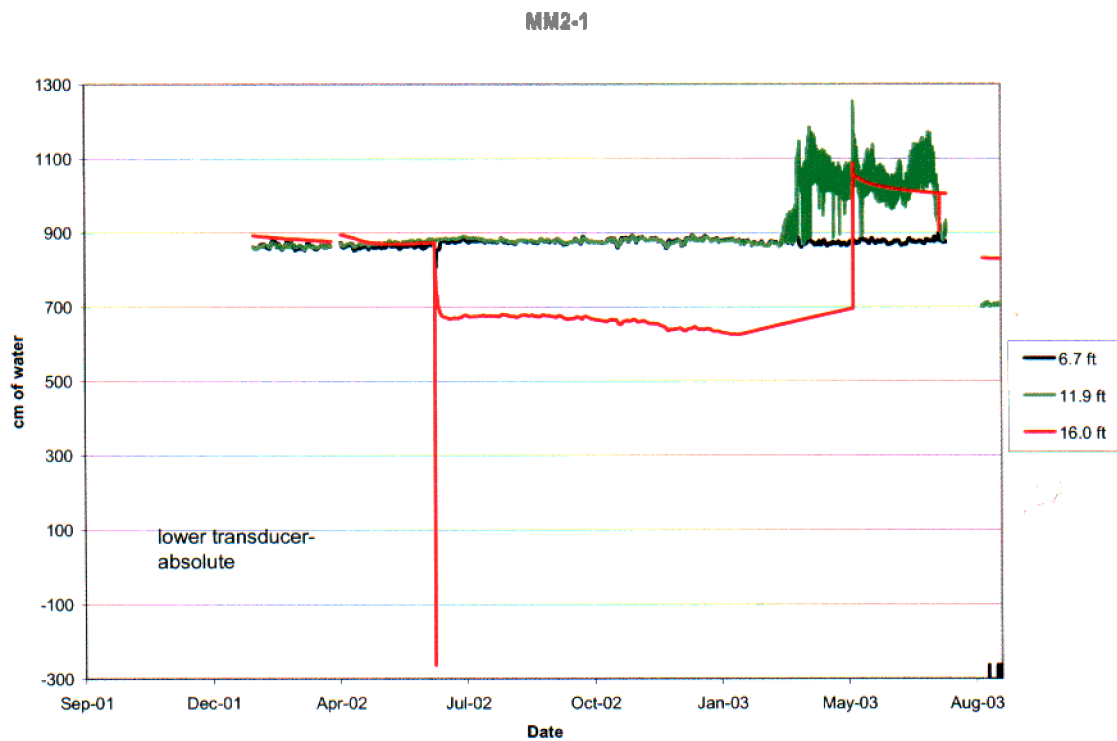
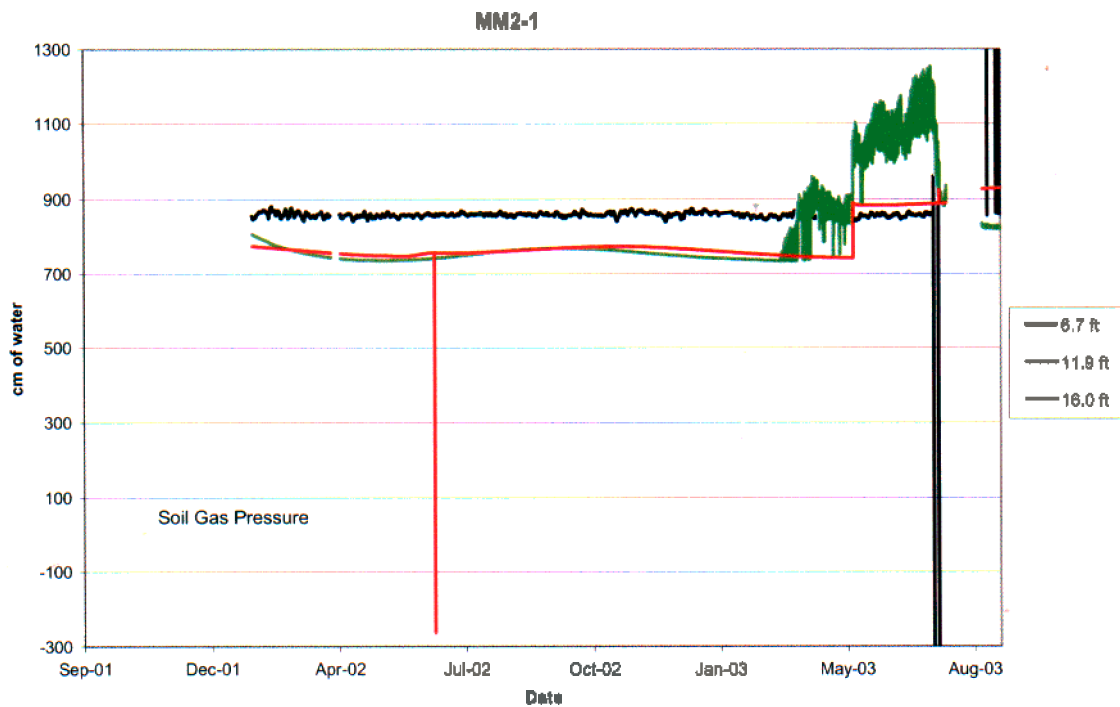


Figure D-13. MM2-1.

T1, 6.7 ft: Soil gas pressure working till fall 2003, absolute wp transducer won't hold vacuum.
 T2, 11.9 ft: Soil gas pressure and absolute wp transducers may be working by fall 2003.
 T3, 16 ft: gas pressure not working in fall, not clear if absolute wp transducer is currently working.

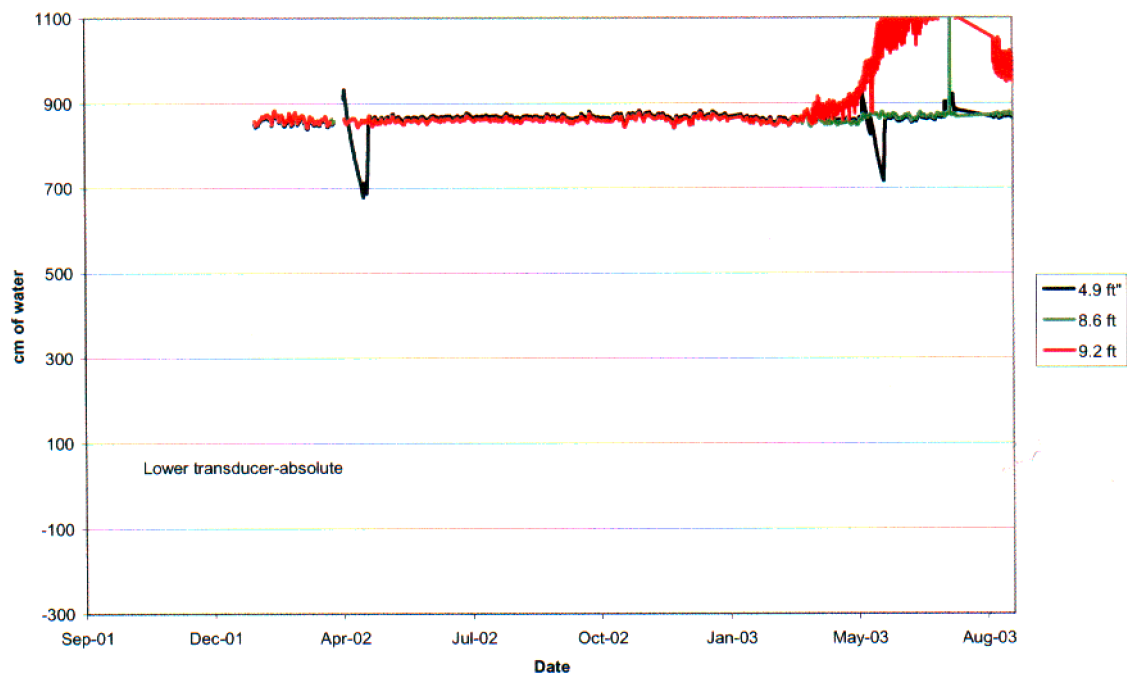
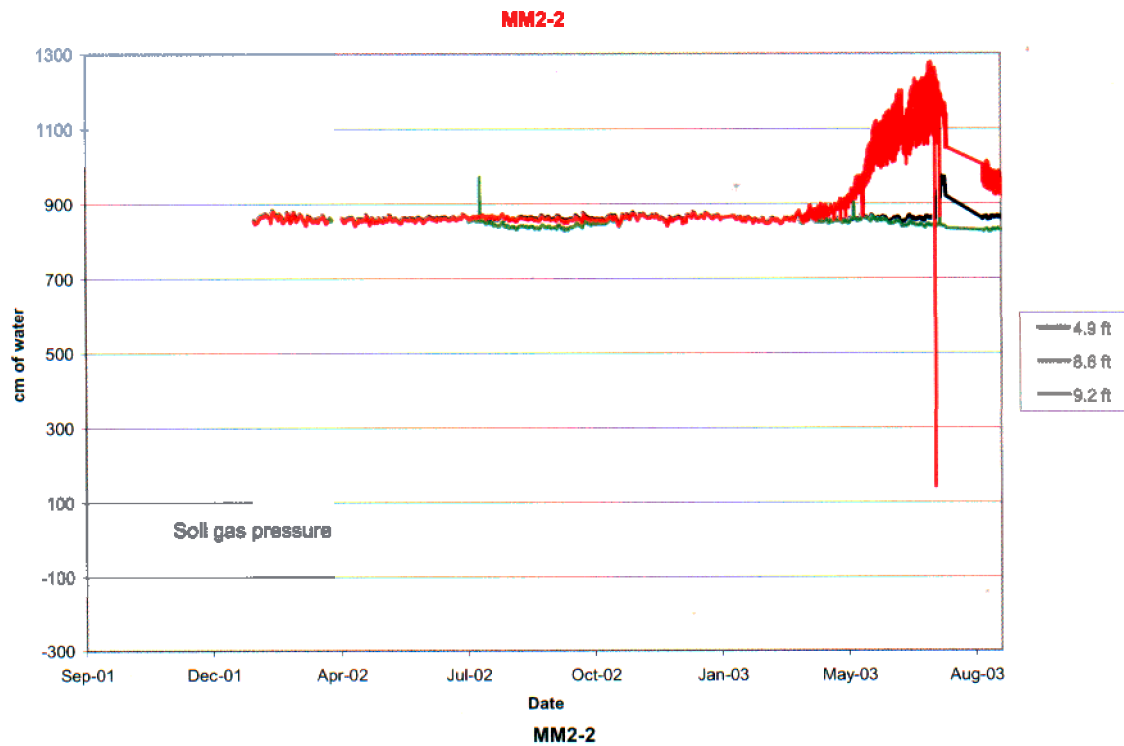


Figure D-14. MM2-2.

T1, 5 ft: Soil gas pressure is tracking well, absolute wp transducer started to work several times.
 T2, 8.6 ft: Soil gas pressure tracks well, absolute wp transducer has shown no signs of working.
 T3, 9.2 ft: Soil gas pressure and absolute wp transducer have electrical problems, lower transducer has shown no sign of working.

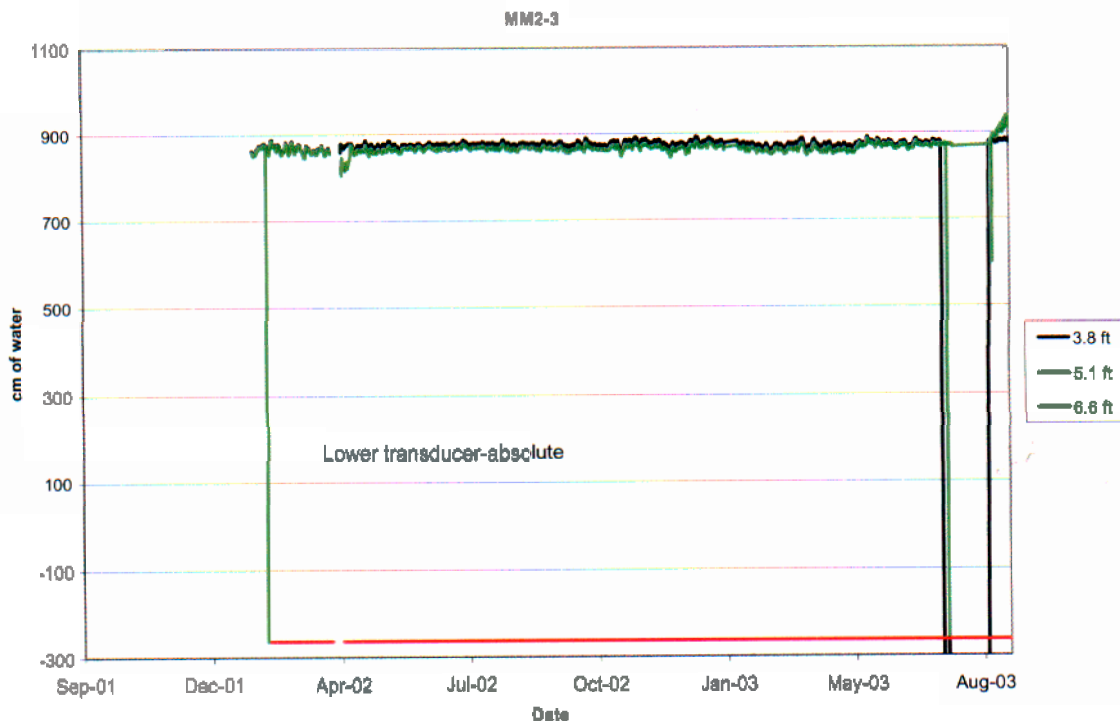
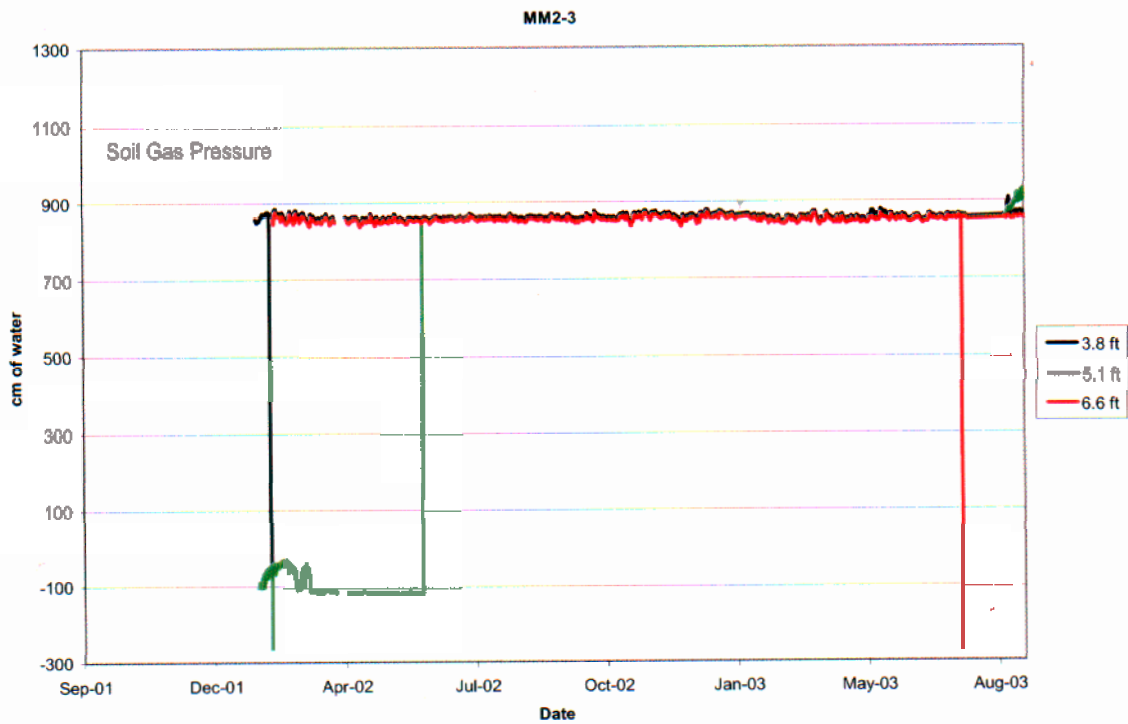


Figure D-15. MM2-3.

T1, 3.8 ft: Soil gas pressure looks good, absolute wp transducer has shown no signs of working.
 T2, 5.1 ft: Soil gas pressure tracks well until August 2003, absolute wp transducer shows no sign of working.
 T3, 6.6 ft: Soil gas pressure tracks well, [REDACTED] has failed.

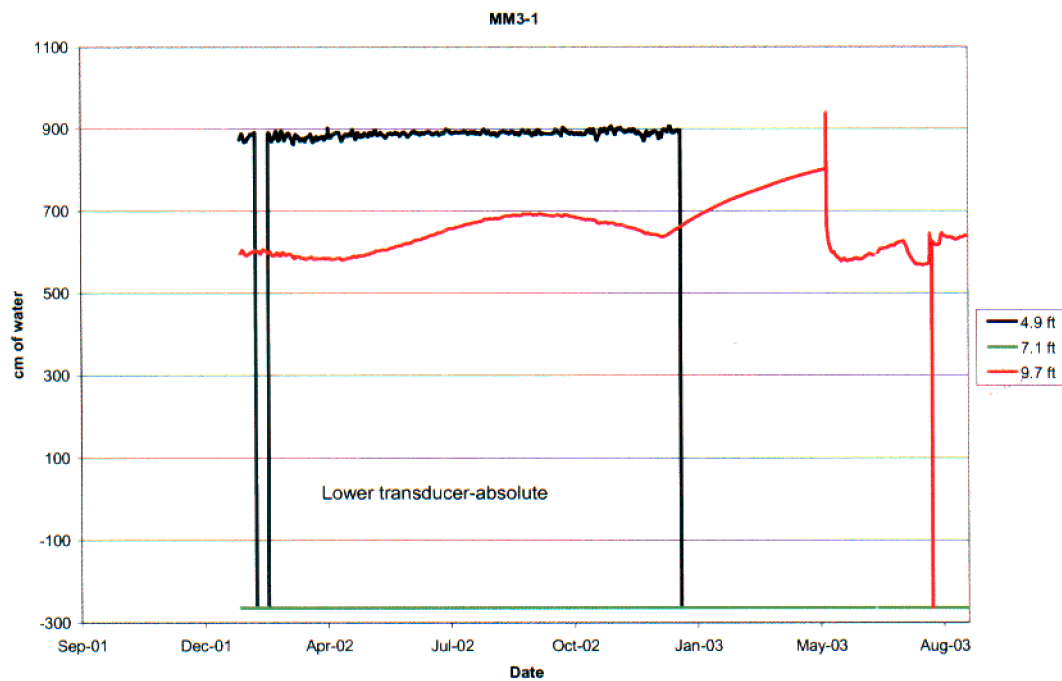
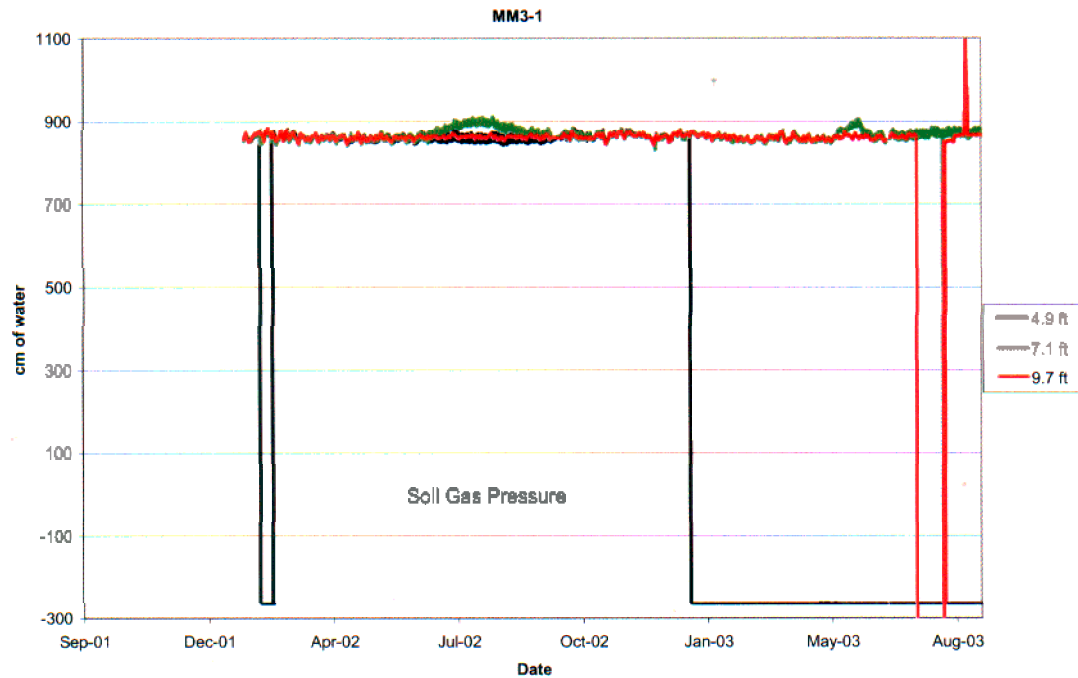


Figure D-16. MM3-1.

T1, 4.9 ft: Soil gas pressure no signal, absolute wp transducer no signal and spool valve not working.
 T2, 7.1 ft: Soil gas pressure working, absolute wp transducer no signal (-273).
 T3, 9.7 ft: Soil gas pressure working, absolute wp transducer working.

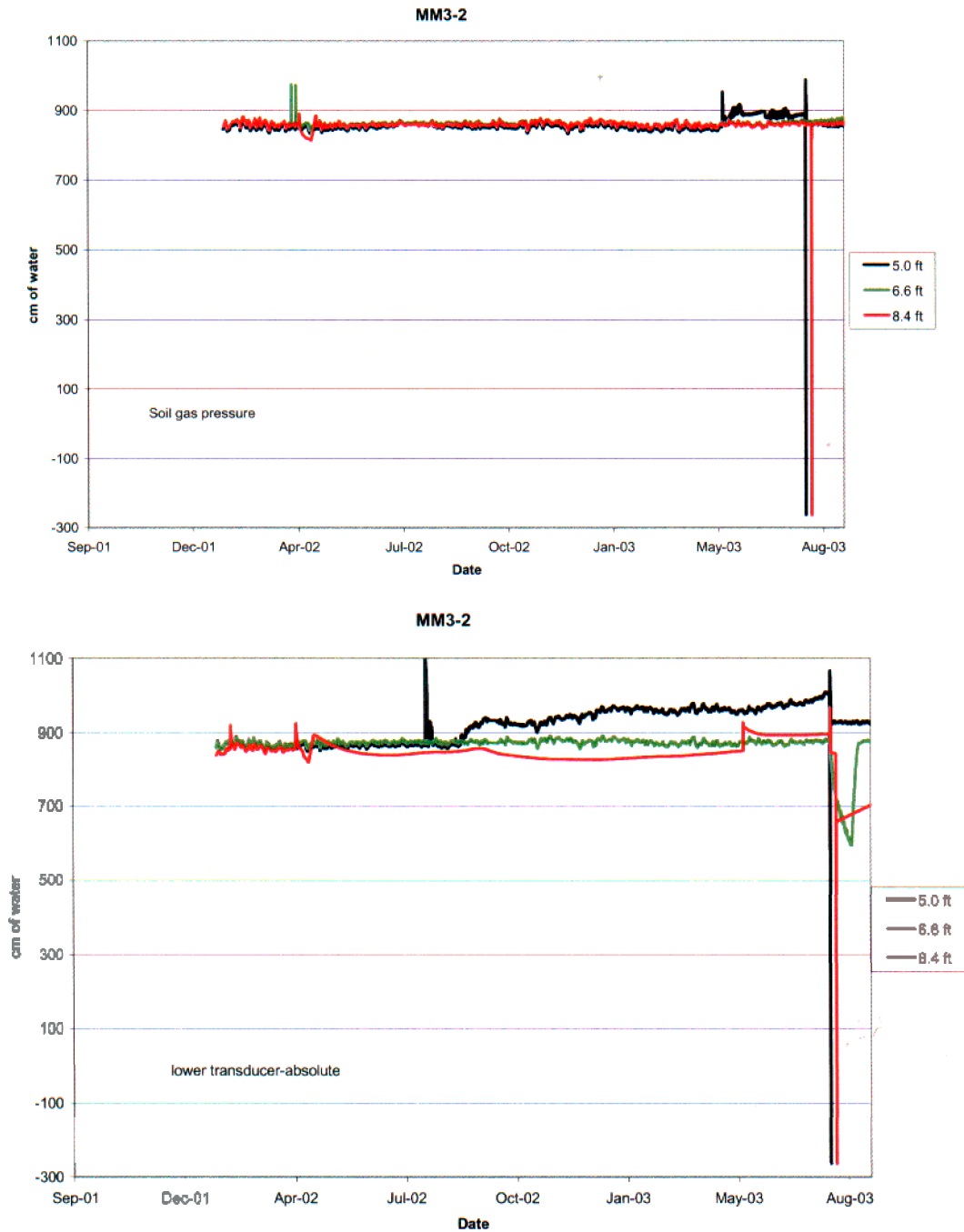


Figure D-17. MM3-2.

T1, 5 ft: Soil gas pressure working, absolute wp transducer shows no sign of holding vacuum.
 T2, 6.6 ft: Soil gas pressure working, absolute wp transducer showed signs of working in fall 2003.
 T3, 8.4 ft: Soil gas pressure working, absolute wp transducer not working, tubing pulled out during field operations.

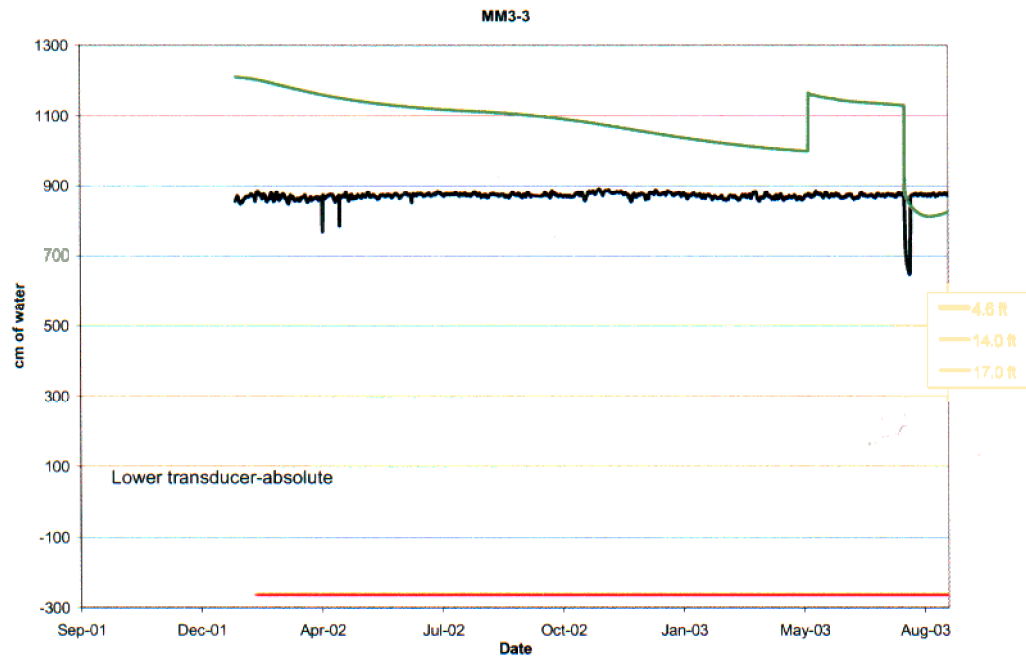
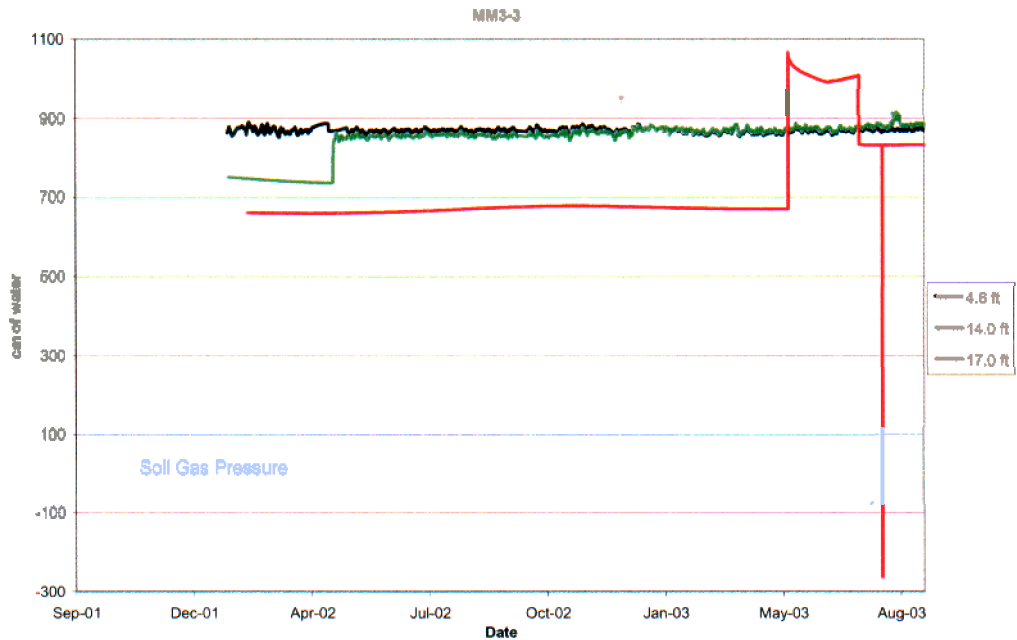


Figure D-18. MM3-3.

T1, 14 ft: Soil gas pressure working, absolute wp transducer possibly coming into range.
 T2, 4.6 ft: Soil gas pressure working, absolute transducer showed signs of working in summer 2003.
 T3, 17 ft: Soil gas pressure range is not consistent, absolute wp transducer—no signal, 273.

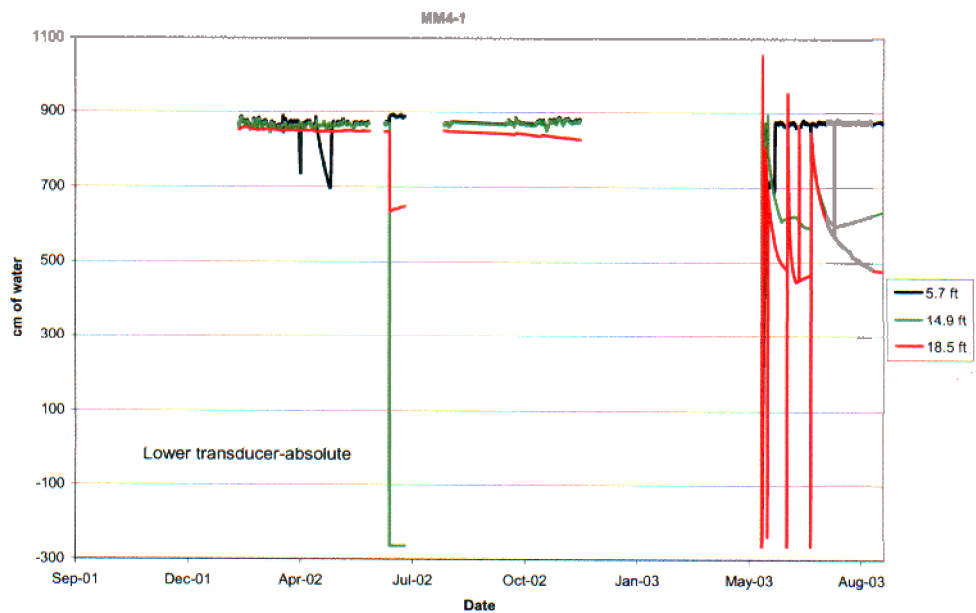
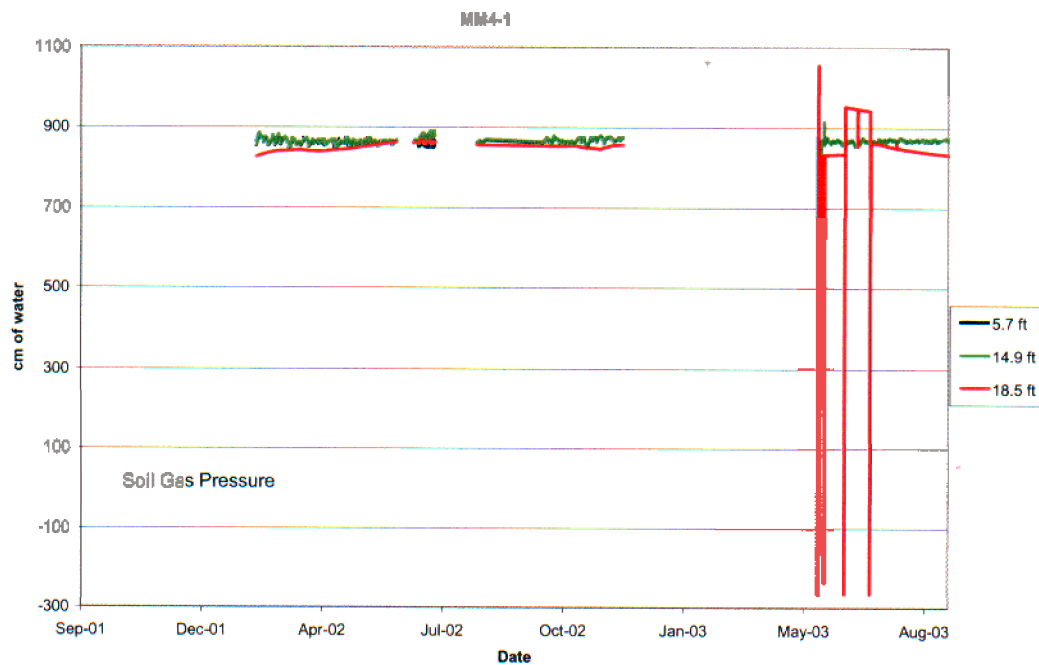


Figure D-19. MM4-1.

T1, 5.7 ft: Soil gas pressure working, absolute wp transducer works sporadically.
T2, 14.9 ft: Soil gas pressure working, absolute wp transducer working sporadically.
T3, 18.5 ft: Soil gas pressure working but hydraulically disconnected from the atmosphere, transducer working sporadically.

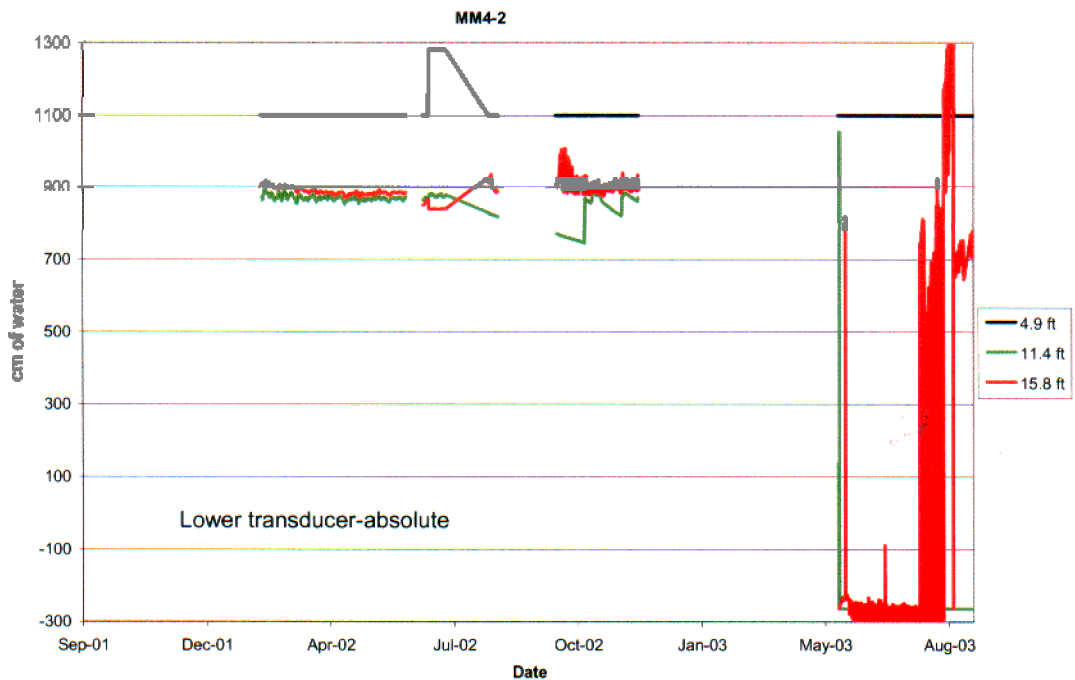
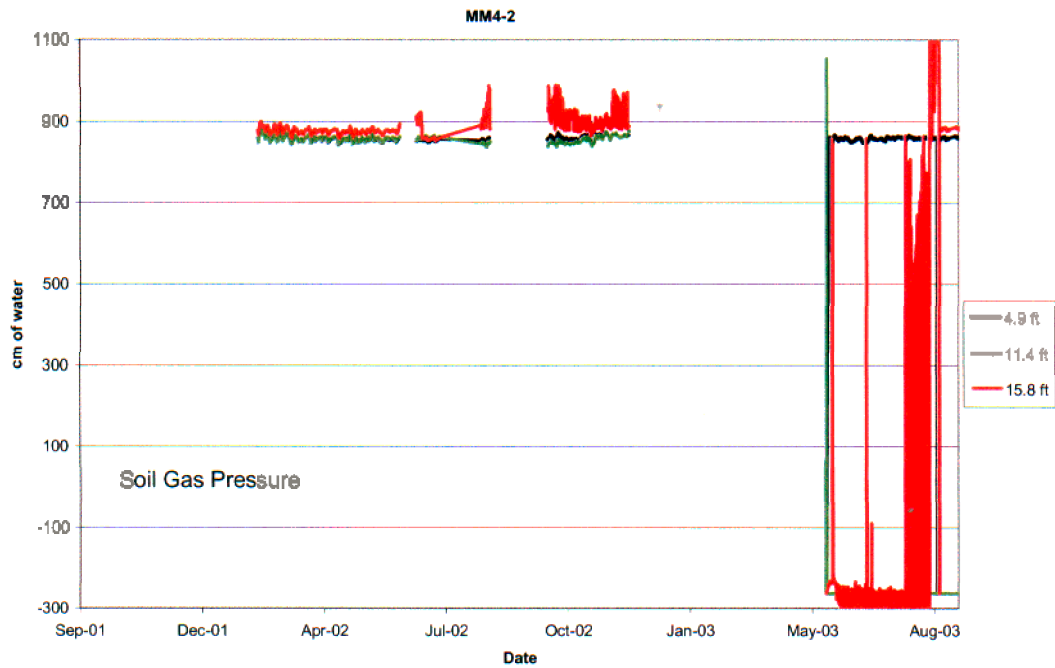


Figure D-20. MM4-2.

T1, 4.9 ft: Soil gas pressure working, absolute wp transducer gives out-of-range readings.
 T2, 11.4 ft: Soil gas pressure no longer working (-273), absolute wp transducer—currently no signal (-273) but has worked in past.
 T3, 15.8 ft: Soil gas pressure working sporadically, absolute wp transducer is not consistent.

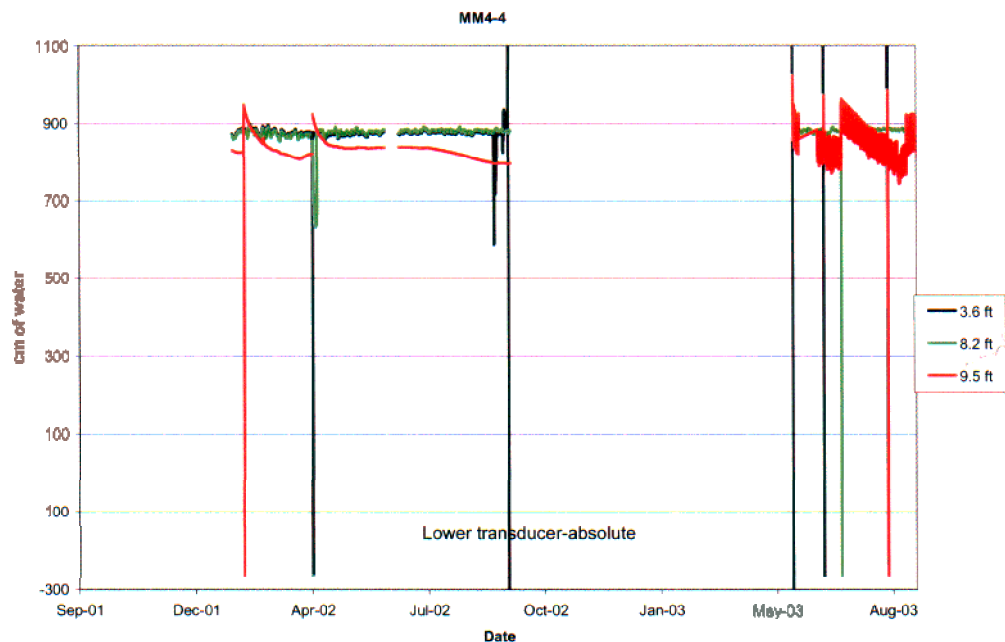
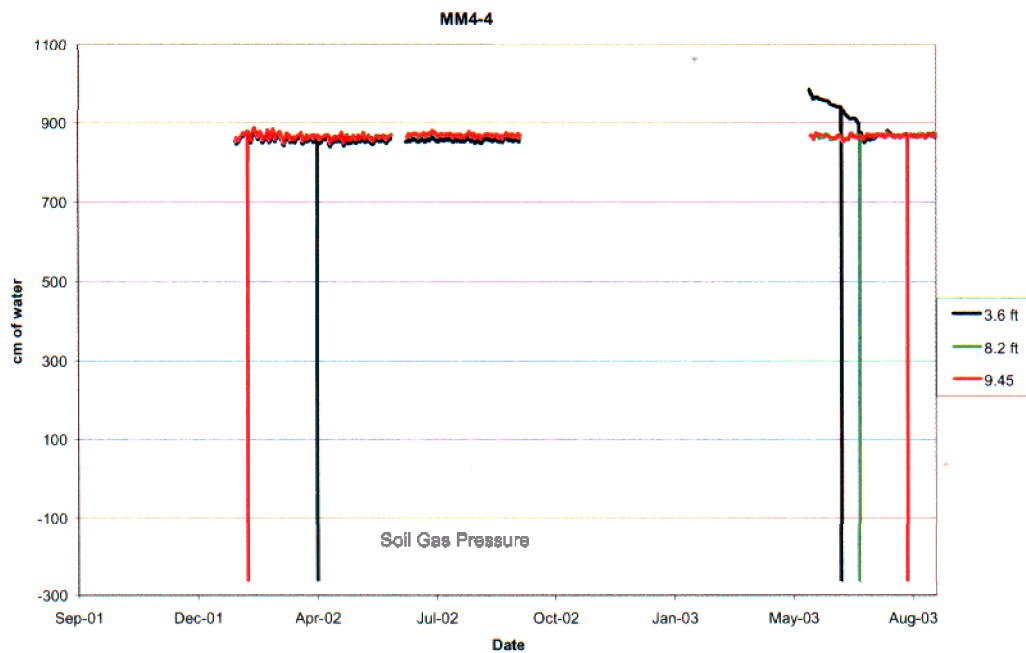


Figure D-21. MM4-4.

T1, 3.6 ft: soil gas pressure working, absolute wp transducer out of range.
 T2, 8.2 ft: soil gas pressure working, absolute wp transducer shows no sign of working.
 T3, 9.5 ft: soil gas pressure working, absolute wp transducer worked sporadically and has electrical problem, may be loose wire.

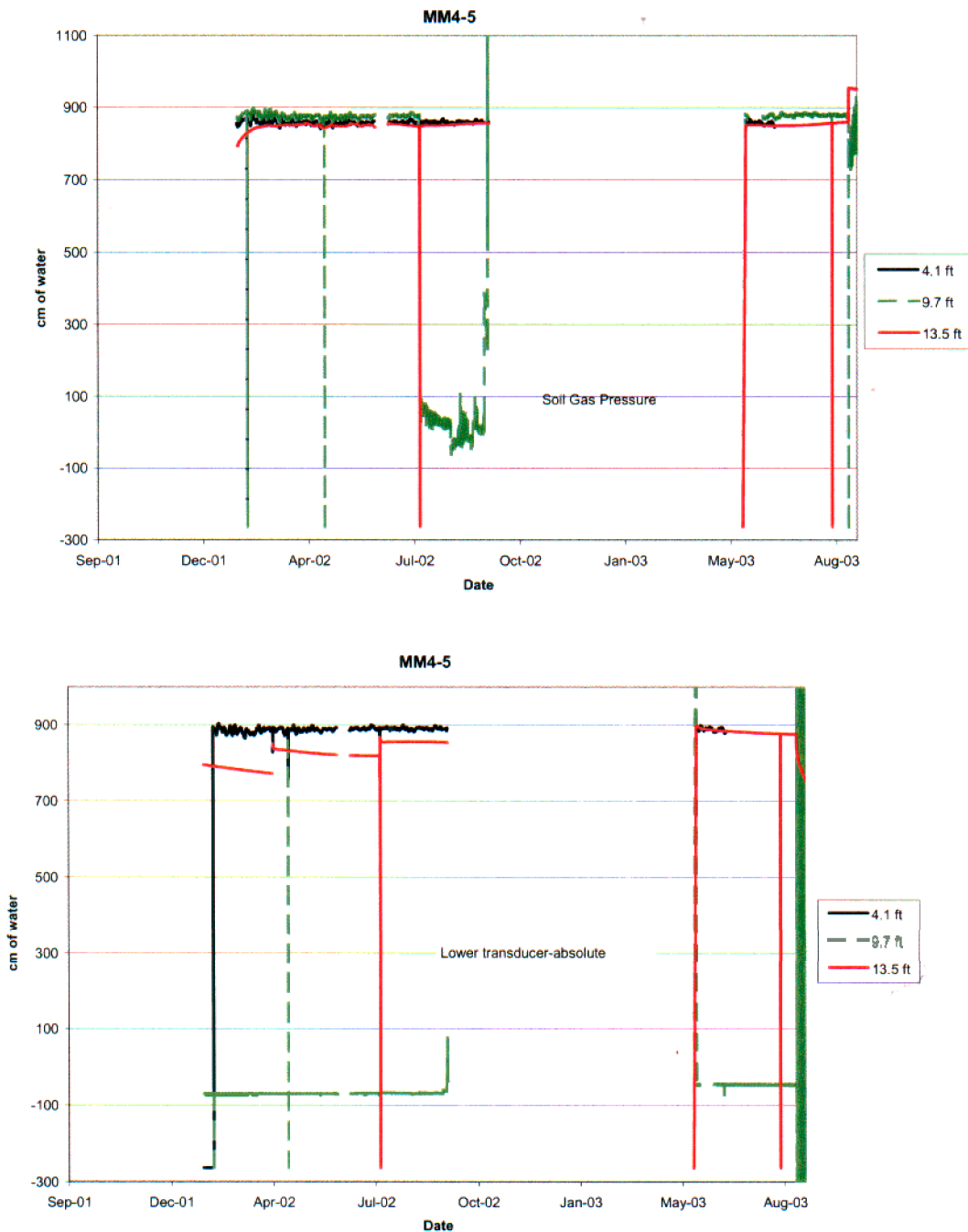
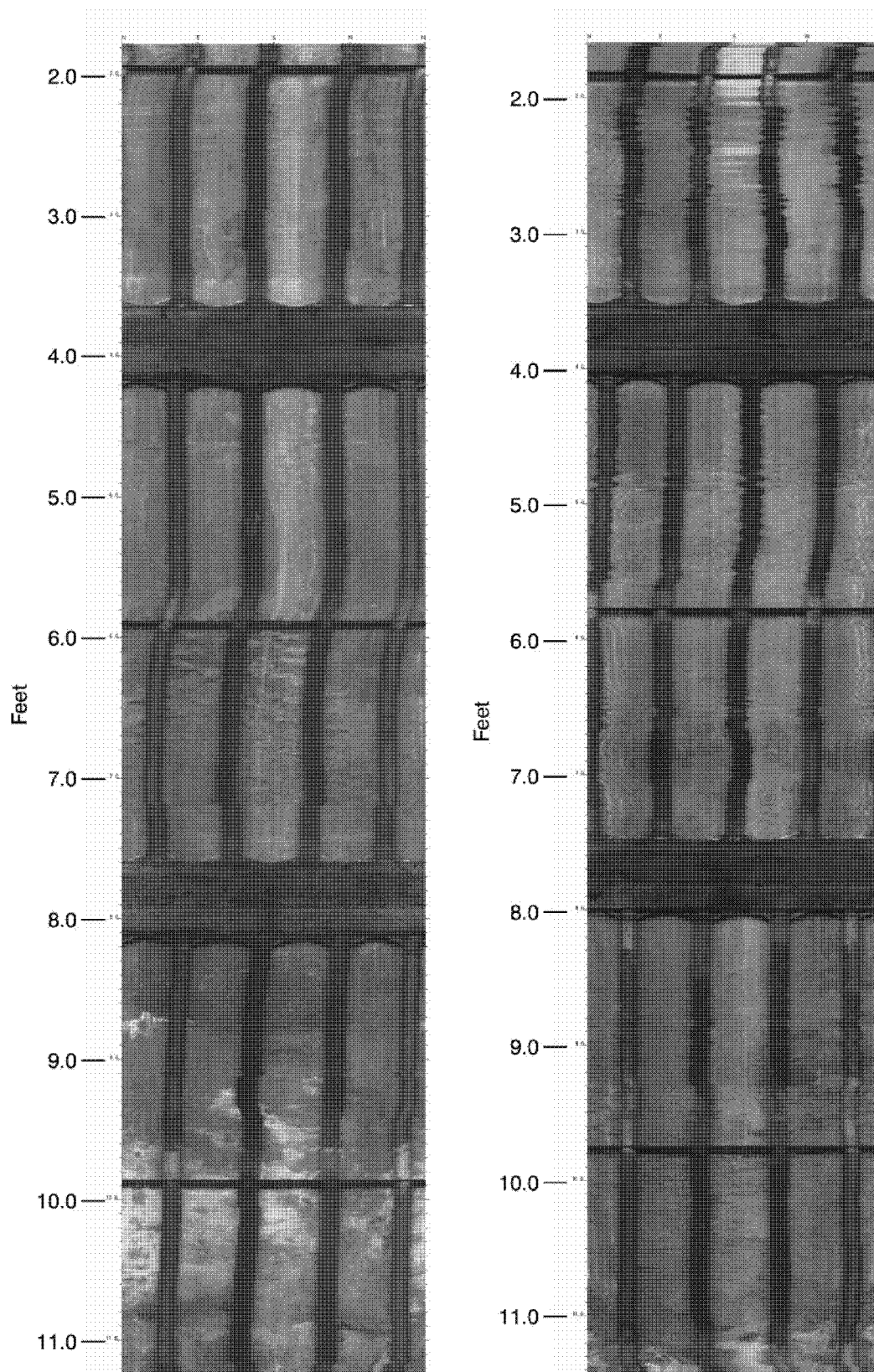


Figure D-22. MM4-5.

T1, 4.1 ft: No soil gas pressure and absolute wp transducer data since June 2003.
 T2, 9.7 ft: Soil gas pressure has worked, absolute wp transducer does not respond.
 T3, 13.5 ft: Soil gas pressure lost calibration, absolute wp transducer appears to be working.

Appendix E

Optical Televiewer Digital Images



G1201-01

Figure E-1. Visual probe Clusters 743-03 and 741-8.

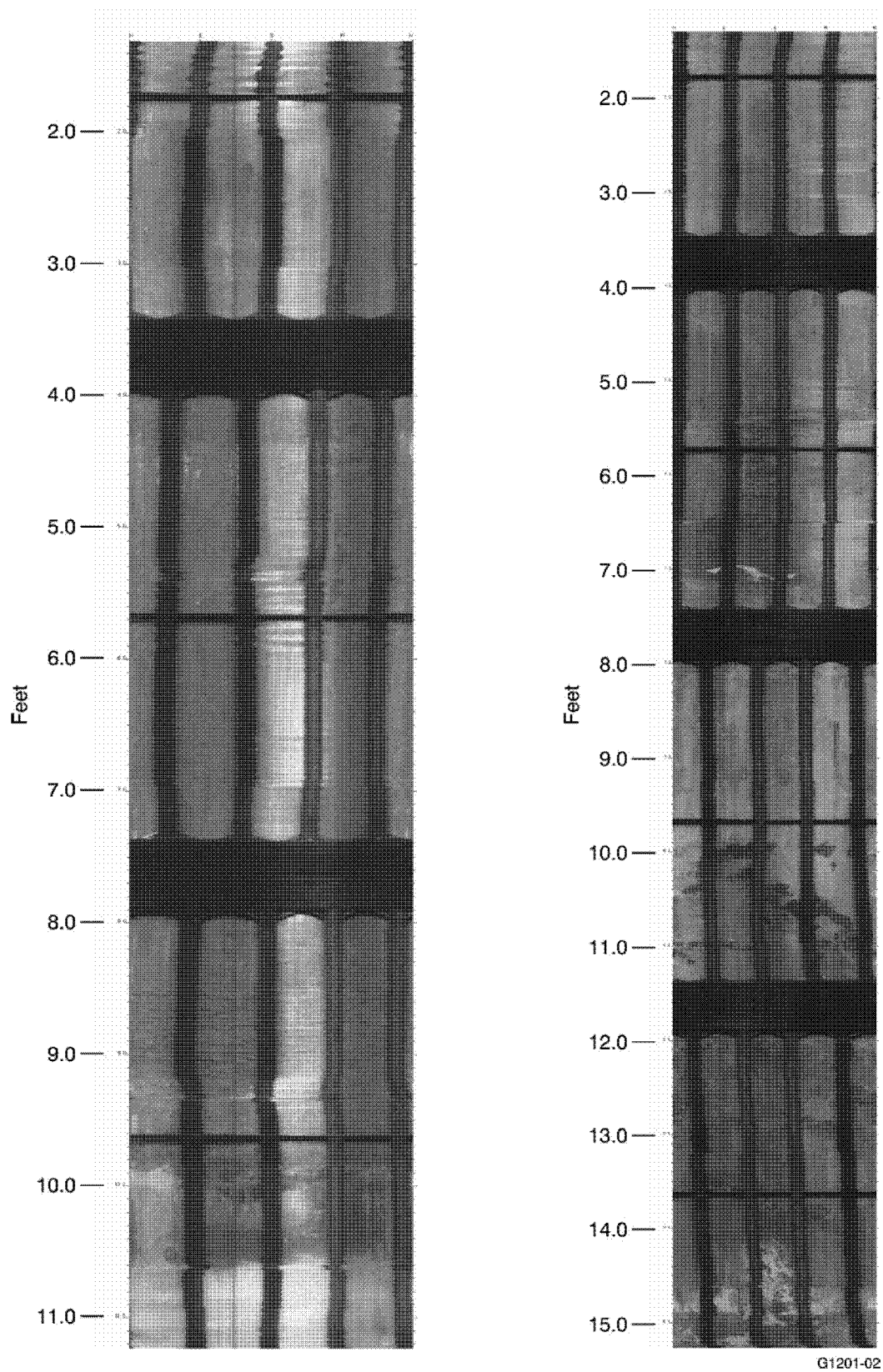


Figure E-2. Visual probe Clusters 743-08 and DU-8.

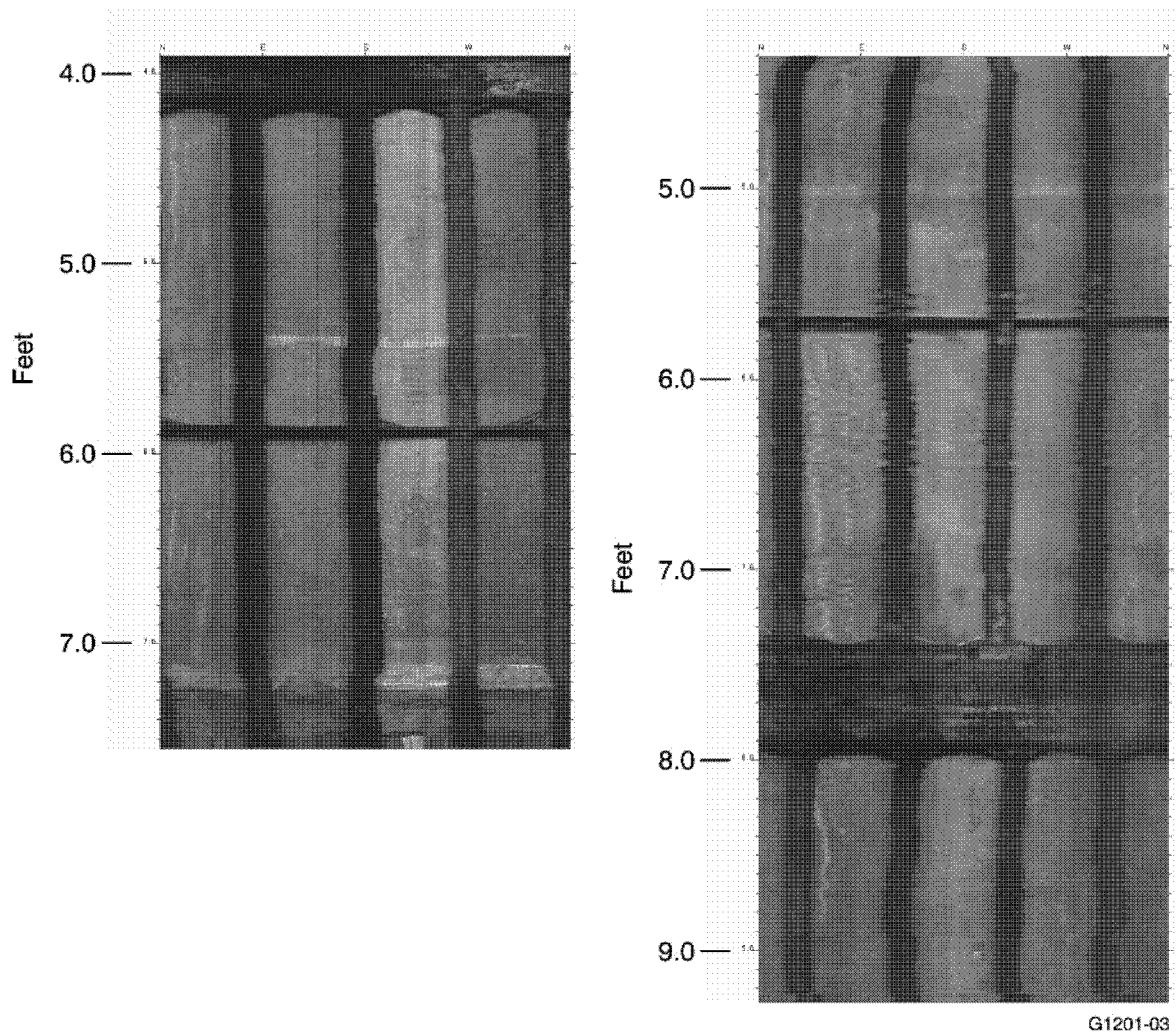


Figure E-3. Visual probe Clusters DU-10 and DU-14.